

Remarks/Arguments:

Applicants thank the Examiner for the opportunity to discuss the claims with him on January 13, 2004, and for his helpful suggestions.

Claims 1-3, 5 and 7-9 stand rejected. Applicants have now canceled claims 1-7 and have amended claims 8-9. Claims 10-12 are newly added.

Abstract

As requested, Applicants have now submitted a new abstract.

Section 112 Rejections

Claims 1-3 and 7 have now been canceled.

Section 102 Rejections

Claims 1-7 have now been canceled. Claims 8-9 have been rejected as being anticipated by Maeda '872, or Maeda '988. Applicants respectfully submit that this rejection is overcome for the reasons set forth below.

Applicants' invention, as recited in amended claim 8, includes features which are not anticipated or suggested by either of the cited references, namely:

- (a) receiving the **sequence of multivalued data for consecutive recording on a single track of the recording medium;**
- (b) representing the sequence... by a sequence of power levels; . . .
- (d) **averaging the first and third power levels to obtain an averaged power level;**
- (e) modifying the **second power level** in each group by a derived value dependent on the **averaged power level**; and
- (f) recording on the **single track** the sequence of power levels of step (b) after being modified by step (e).

Basis for amended claim 8 may be found, for example, in Fig. 1 and in the specification, at page 6, line 12 to page 8, line 19. As discussed and shown, a sequence of recording information having four values is supplied to shift register 1. The information from the shift register is supplied to a D/A converter, which outputs multi-valued power levels corresponding to each respective sequence of recording information. Laser light

source 6a emits light that corresponds to this sequence of power levels. The laser light is focused on information track 70 to record the sequence of power levels on the recording medium.

The sequence of multi-valued data is **consecutively recorded on a single track** of the recording medium. The **first, second and third consecutive power levels** in register 1a, 1b and 1c are grouped (as recited in step (c) of claim 8) by power corrector 3 to obtain **an average of the first and third power levels**. The **second power level** in each group is modified by the **averaged power level of the first and third group**. The modified power level is then recorded on a single track.

As discussed, for example, at page 8 of the specification, lines 16-19, when a given mark is recorded, a correction is made in accordance with the recording amplitudes of the adjacent marks by use of recording power corrector 3. Because of Applicants' invention, the density of information recorded on a single track may be advantageously increased.

Maeda '872 discloses an information recording device that stores original signals of a target track and its adjacent recording tracks. A computational circuit generates a component of cross talk between the adjacent recording tracks. The recording device records the target signal as a product of the component of cross talk from the adjacent tracks and an original signal of the target track. When reading the information on the recording medium, the component of cross talk is canceled.

Maeda '872 discloses, at column 4, lines 15-20, that the system stores data **corresponding to five tracks including the target track**. As disclosed at column 4, lines 29-43, a signal extraction circuit may extract, from storage, data corresponding to three adjacent tracks to compute a component of cross talk. Accordingly, Maeda '872 discloses a system that corrects for cross talk between a target track and its adjacent tracks, **based on finding a component of these signals provided on adjacent tracks**.

Maeda '872, on the other hand, does **not** disclose step (d) of **averaging the first and third power levels to obtain an averaged power level**, where the first and third power levels are provided for **consecutive recording on a single track of a recording medium** (as recited in step (a)). Moreover, Maeda '872 does **not** disclose **modifying the second power level** by a derived value which is dependent on the **averaged power level of the first and third power levels from the sequence of consecutive power levels**. Furthermore, Maeda '872 does **not** disclose recording on the single track that specific modified power level.

Similarly, Maeda '988 discloses a two dimensional waveform equalization system for reducing cross talk interference between adjacent tracks on a recording medium. Maeda '988 discloses removing the cross talk by using equalization coefficients. As shown in Fig. 3, reference characters (a)-(h) each represent the amount of information leakage from adjacent points on **three different tracks**. A reproduced signal is expressed by compensating for the amount of information leakage coming from the adjacent tracks.

Similar to Maeda '872, Maeda '988 does **not** disclose step (d) of claim 8 for **averaging the first and third power levels to obtain an averaged power level**, where the first and third power levels are provided for **consecutive recording on a single track of a recording medium** (as recited in step (a)). Moreover, Maeda '988 does **not** disclose

modifying the second power level by a derived value which is dependent on the **averaged power level of the first and third power levels from the sequence of consecutive power levels**. Furthermore, Maeda '988 does **not** disclose recording on the single track that specific modified power level.

Dependent Claim 9

Claim 9 further limits claim 8 by reciting that modification of the second power level in each group includes **differencing the averaged power level and the second power level** to obtain a difference and **multiplying the difference by a predetermined factor to obtain the derived value**. This limitation is not disclosed or suggested by any of the cited references.

Newly Added Claim 10

Newly added claim 10 recites a method for reducing interference of multi-valued data in a reading process by adjusting the power of a write pulse. The method includes the steps of:

- (a) storing...multivalued data **sequentially**;
- (b) **assigning a write laser power, respectively, to each multivalued data**; and
- (c) **modifying the write laser powers sequentially using multivalues of a preceding recorded mark value and a following mark value**.

Newly added claim 10 recites that the multivalued data are written **sequentially**. For each multivalued data, there is a write laser power assigned to it. The **write laser powers are modified sequentially using the multivalues of a preceding recorded mark value and a following mark value**. Since the preceding recorded mark value and the following mark value are written sequentially, it is respectfully submitted that these multivalued data are **sequentially recorded on a single track**.

Maeda '872 does **not** suggest assigning a write laser power, respectively, to each multivalued data stored sequentially. Maeda '872 does **not** suggest modifying the write laser powers **sequentially using multivalues of a preceding recorded mark value and a following mark value**.

Maeda '988 similarly does **not** suggest assigning a write laser power, respectively, to each multivalued data stored sequentially. Maeda '988 does **not** suggest modifying the write laser powers **sequentially using multivalues of a preceding recorded mark value and a following mark value**.

Newly Added Claim 12

Newly added claim 12 further limits claim 10 by reciting that the recording is **performed sequentially on a single track**.

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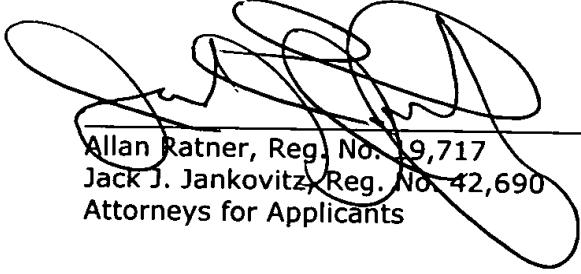
Neither of the cited references suggests recording the modified write laser power sequentially on a single track, where the modified write laser power uses multivalues of the preceding recorded mark value and the following mark value on a single track.

Conclusion

Claims 1-7 have been canceled. Claims 8-12 are in condition for allowance.

Respectfully submitted,

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